

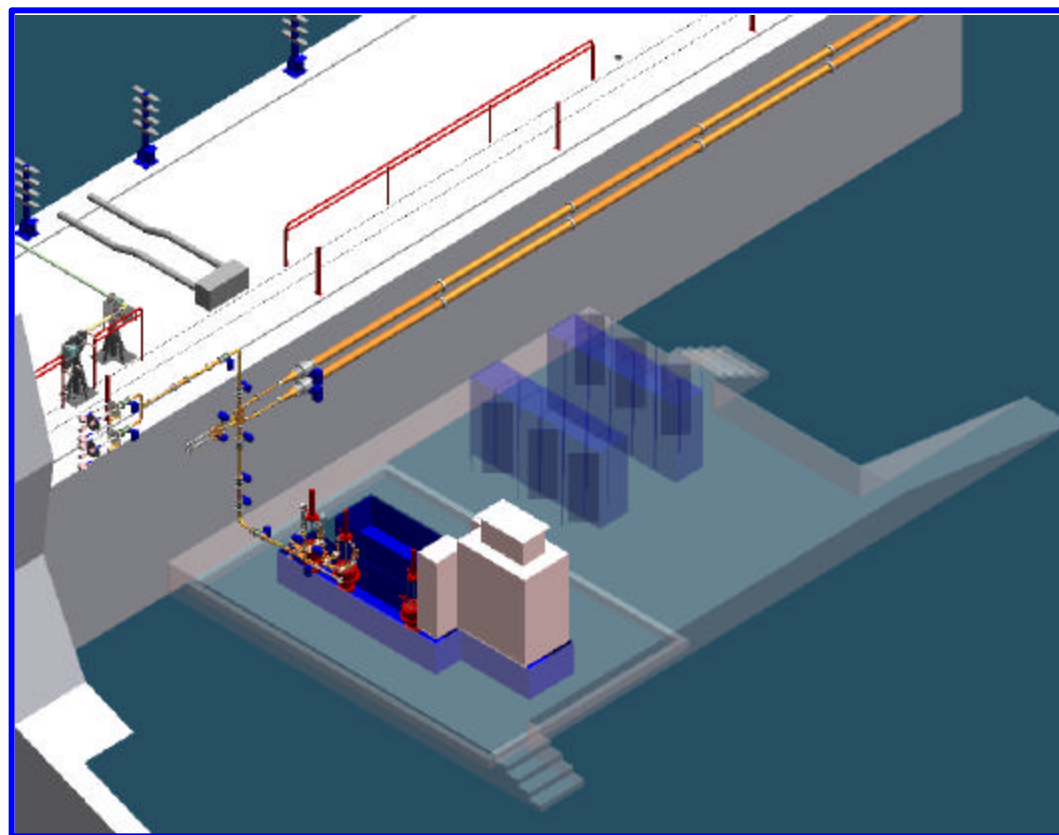


The 8-Pack Project

An overview of the status and schedule for the project.

Modulator commissioning in August - delayed

High power SLED operations Jan. 2003 – full power in March





8-Pack Project People

Project Manager:	David Schultz
Assistant Project Managers:	Joe Frisch, Ray Larsen, John Cornuelle, Clay Corvin
Project Physicist:	Chris Adolphsen
Project Engineer:	Dennis Atkinson, Leif Eriksson
Project System Engineering:	Bobby McKee, open position
NLCTA Interface:	Marc Ross, Keith Jobe
Safety Liaison:	Keith Jobe
Conventional Facilities:	Javier Sevilla, Fred Asiri, Juanito Buhain
Klystrons :	John Cornuelle, Erik Jongewaard, Chris Pearson, Saul Gold
Modulators:	Richard Cassel – SLAC, Ed Cook – LLNL, Craig Brooksby – Bechtel
High Power RF:	Stephen Marnock, Carl Rago, Sami Tantawi, Chris Nantista
LLRF:	Steve Smith, Elias Andrikopoulos, Andrew Young
Controls & DAQ:	Ron Chestnut, Kristi Luchini
Vacuum Controls:	Tom Porter, Earl Hamner
Racks:	Mario Ortega
Cable Plant:	Ponciano Rodriguez
PPS Systems:	Patrick Bong
Special Instrumentation:	Joe Frisch, Doug McCormick
High Gradient Girders:	Harry Carter – FNAL



The 8-Pack Project

Demonstrate full NLC RF power & stored energy

- Phase-1: 4-Pack
 - Assemble system with:
 - 2 XP3 klystrons to power the SLED, additional XP3 klystron(s) as available
 - A solid state modulator (from the '4-dog')
 - Multimoded SLED system
 - ☞ Produce NLC spec. power: 600 MW 400 ns (@ source)
Benchmark as a power source (albeit inefficient) for the NLC
 - Test station for running DLDS components at full power
- Phase-2: 8-pack
 - Assemble 8 (total) XP3 klystrons with a (new) solid state modulator
 - Attach DLDS system with a 400ns long arm reaching to a girder of high gradient accelerating structures (from FNAL).
 - ☞ Produce NLC spec. power & pulse length: 500 MW 400 ns (@ girder)
 - Attach a short DLDS arm reaching to a second girder (from FNAL) when available.



8-Pack Status

Administrative:

Schedule has become more developed and is being integrated with the FNAL structure schedule and the NLCTA test schedule.

We have brought on an expert to move it into Primavera and do the resource loading.

Configuration controls are being put into place.

Sub-system reviews have been/are being held, with an internal Project review 2/22

The schedule and budget are both success driven, with little contingency.



8-Pack Current Status

Infrastructure installation
under way;

- Electrical power installed

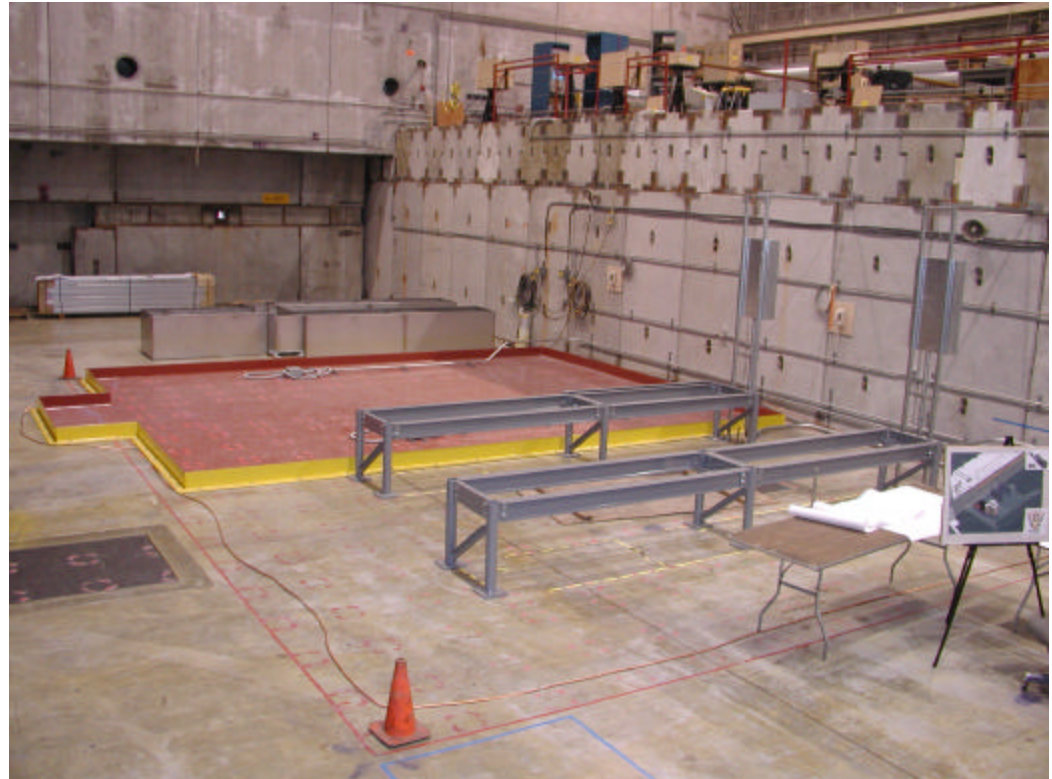
- Modulator HVPS installed

- Electronics racks to be
installed next week

- Modulator/klystron stand to
be delivered at the end of
May

- Infrastructure complete in
July.

- There is little float in this
schedule





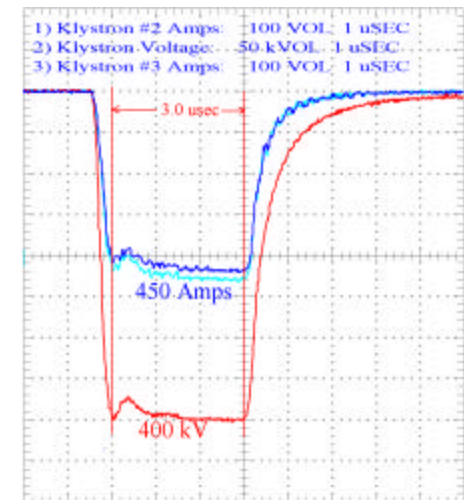
8-Pack Status

Modulator:

'4-Dog' solid state modulator has successfully powered a pair of 5045 S-band klystrons
IGBT's were damaged in sparkdown tests.

Cause understood, remedies under development.

'4-Dog' test program is prolonged as a result.



Modulator to be
installed in system 7/10,
commissioned 8/20
– pacing item on the schedule

Solid-State Modulator Update talk,
J. deLamare



8-Pack Status



XP3#1
75MW

Klystrons:

In high power tests, XP3#1 exhibits an 11.7 GHz oscillation which cannot be damped out.

Damage to the drift tube during assembly?

Transverse magnetic fields from the PM stack?

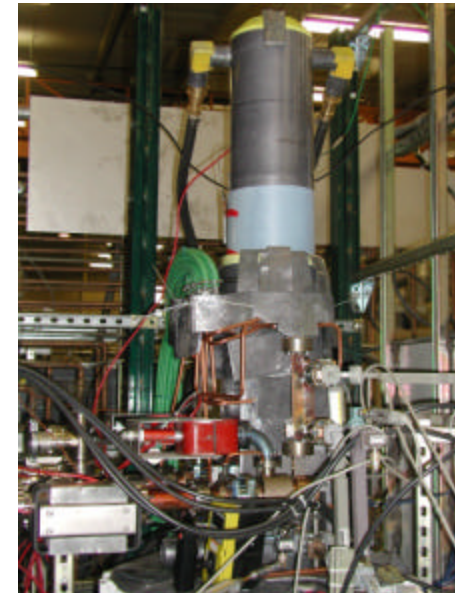
The design of this tube is pushing the technology.

Testing of the XP3#2
is proceeding.

Fabrication of XP3#3
waits for XP3#2 tests.

1st Phase 1 XP3 is scheduled
to be installed 8/22,
& the 2nd 10/18.

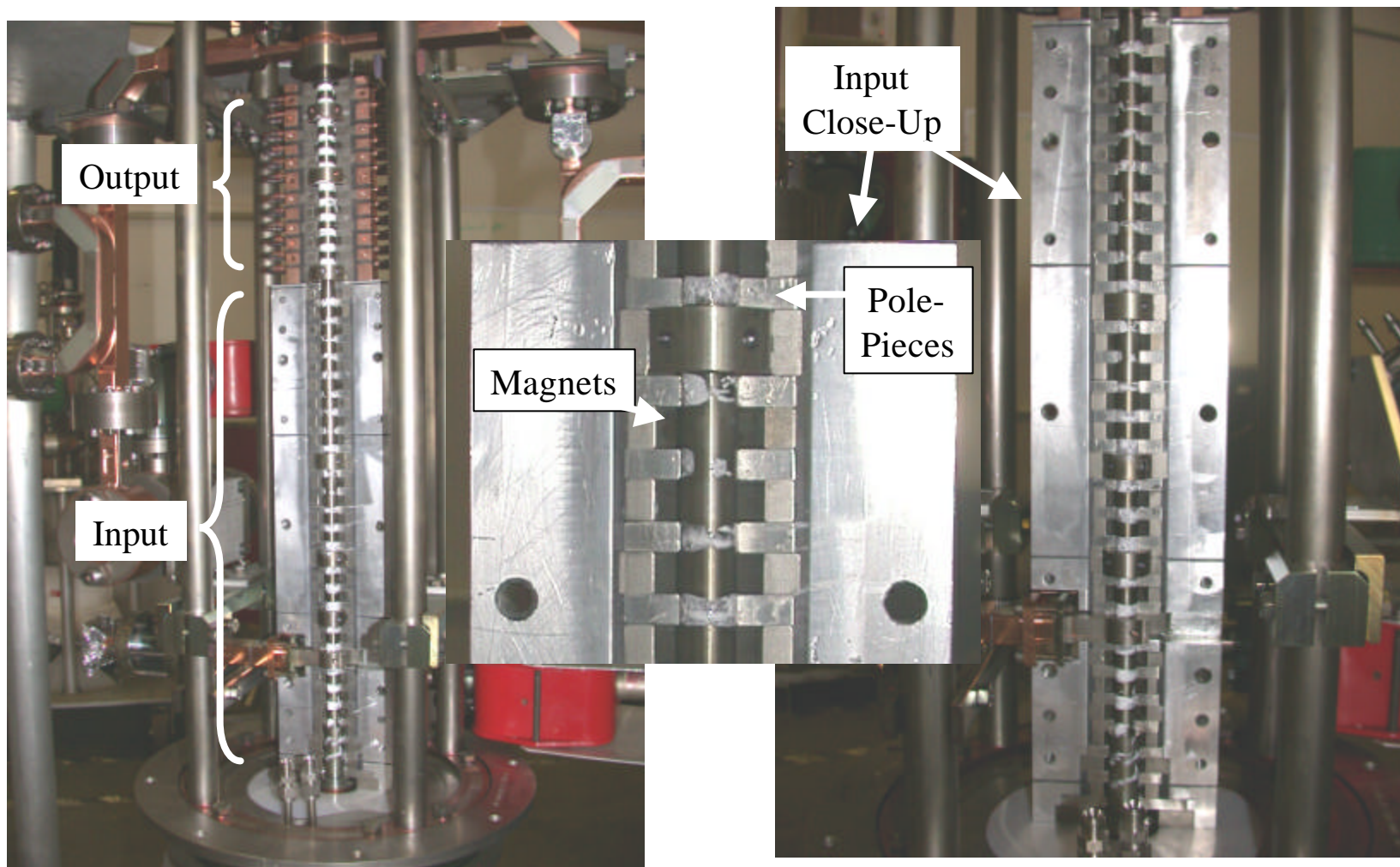
Klystron Development talk, G. Caryotakis





8-Pack Status

XP3 #2 in assembly





8-Pack Status

High power RF system:

Proceeding with the fabrication of most Phase 1 parts.

Observed power loss in a circular/rectangular taper leads to a cold test program to validate modeling and calibrate component designs

- this is underway.

- 1st set of cold test parts due this week,

- 1st set of tests to be done after this meeting.

High power RF commissioning planned in stages:

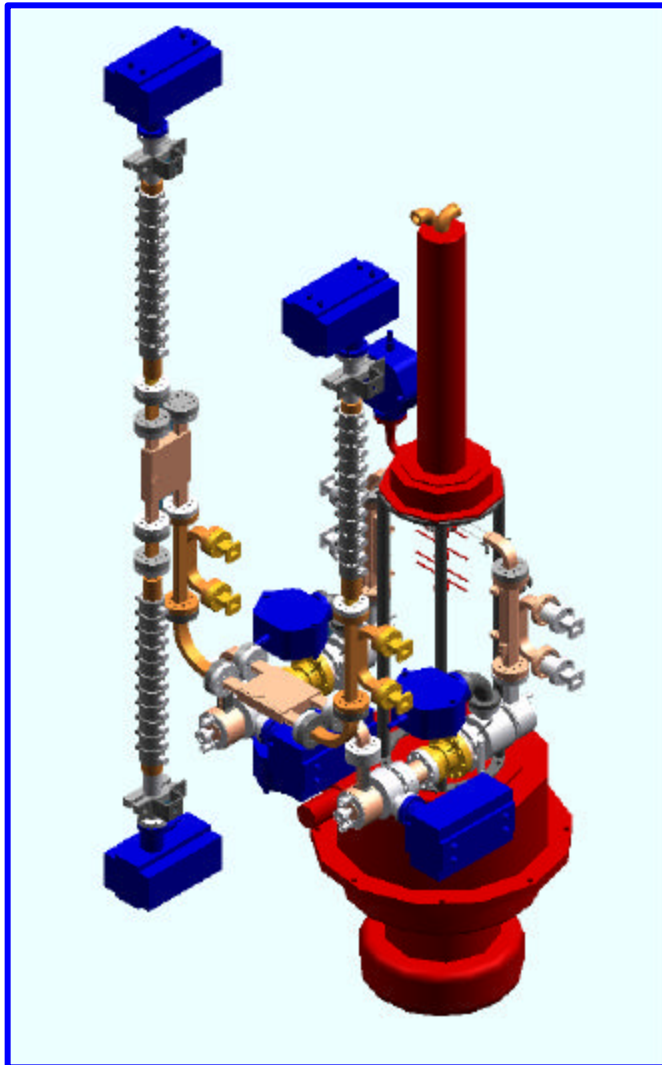
Commission modulator and klystrons in August,

Simplified, lower technical risk, RF system for SLED commissioning,

Lower - loss setup for the 600 MW milestone



4-pack August '02 klystron layout for Modulator & LLRF commissioning

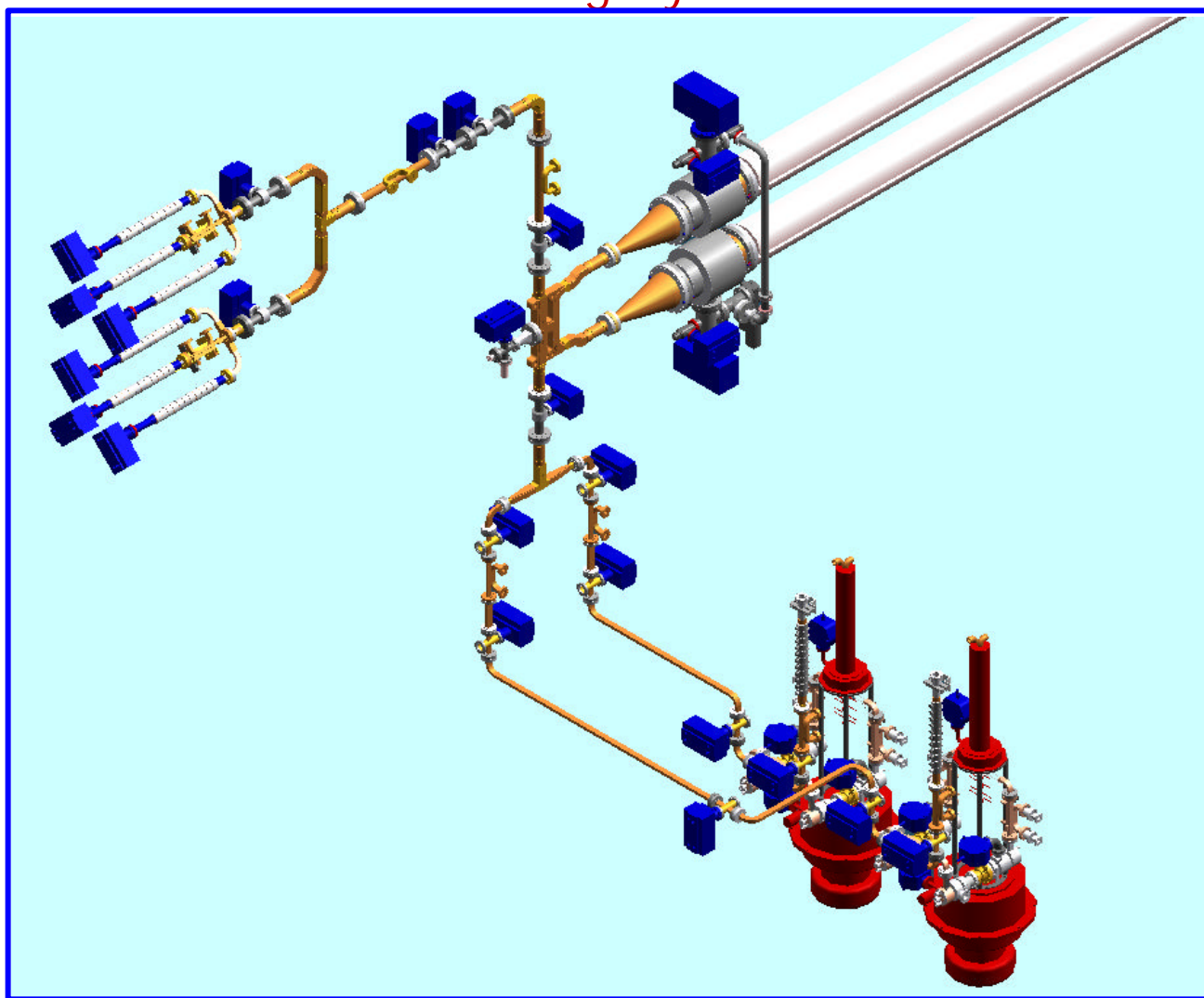


Allows modulator and LLRF
systems to be exercised
while SLED system is being
installed.



4-pack October '02 SLED commissioning layout

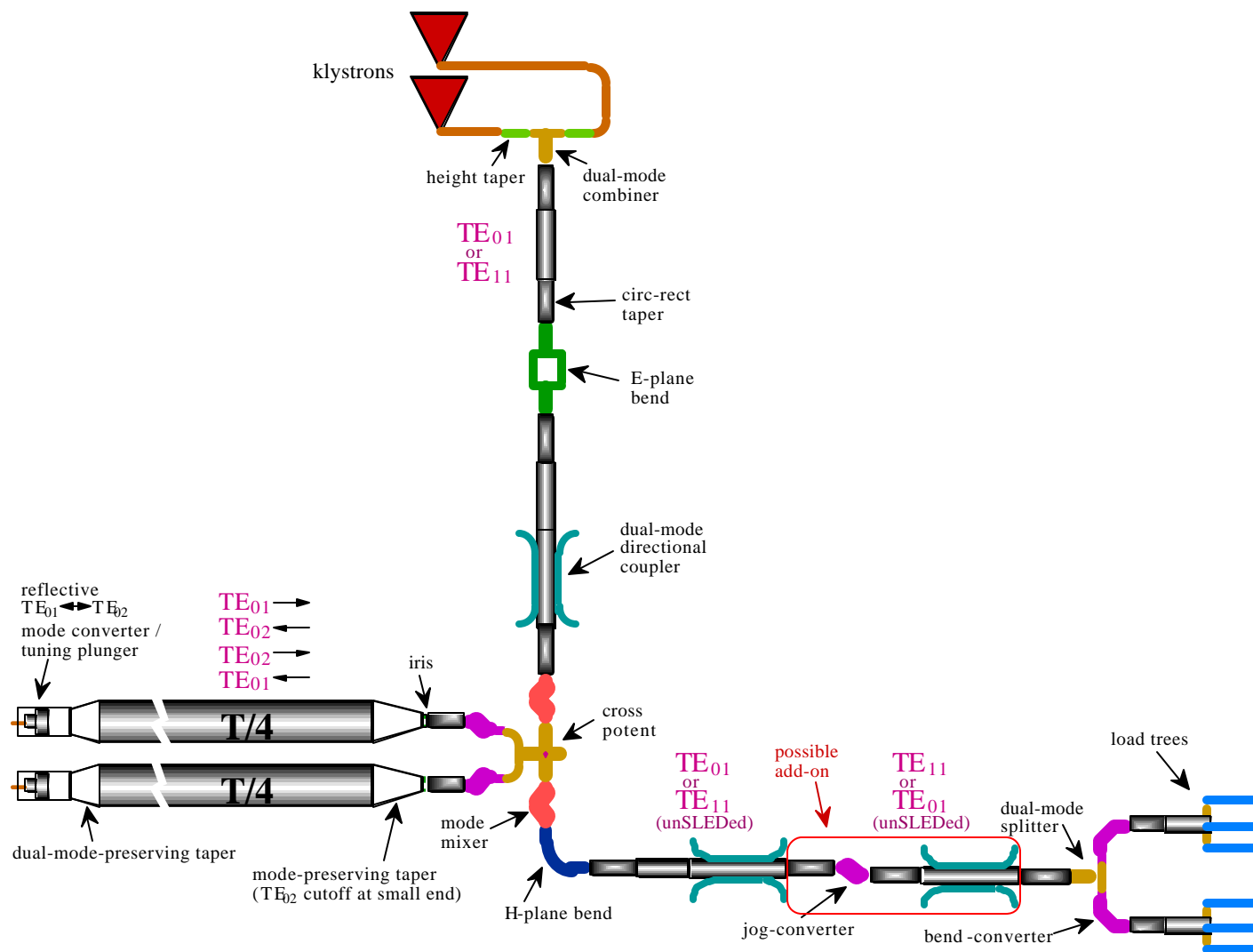
8-Pack Project





Full power dual-moded SLED-II system

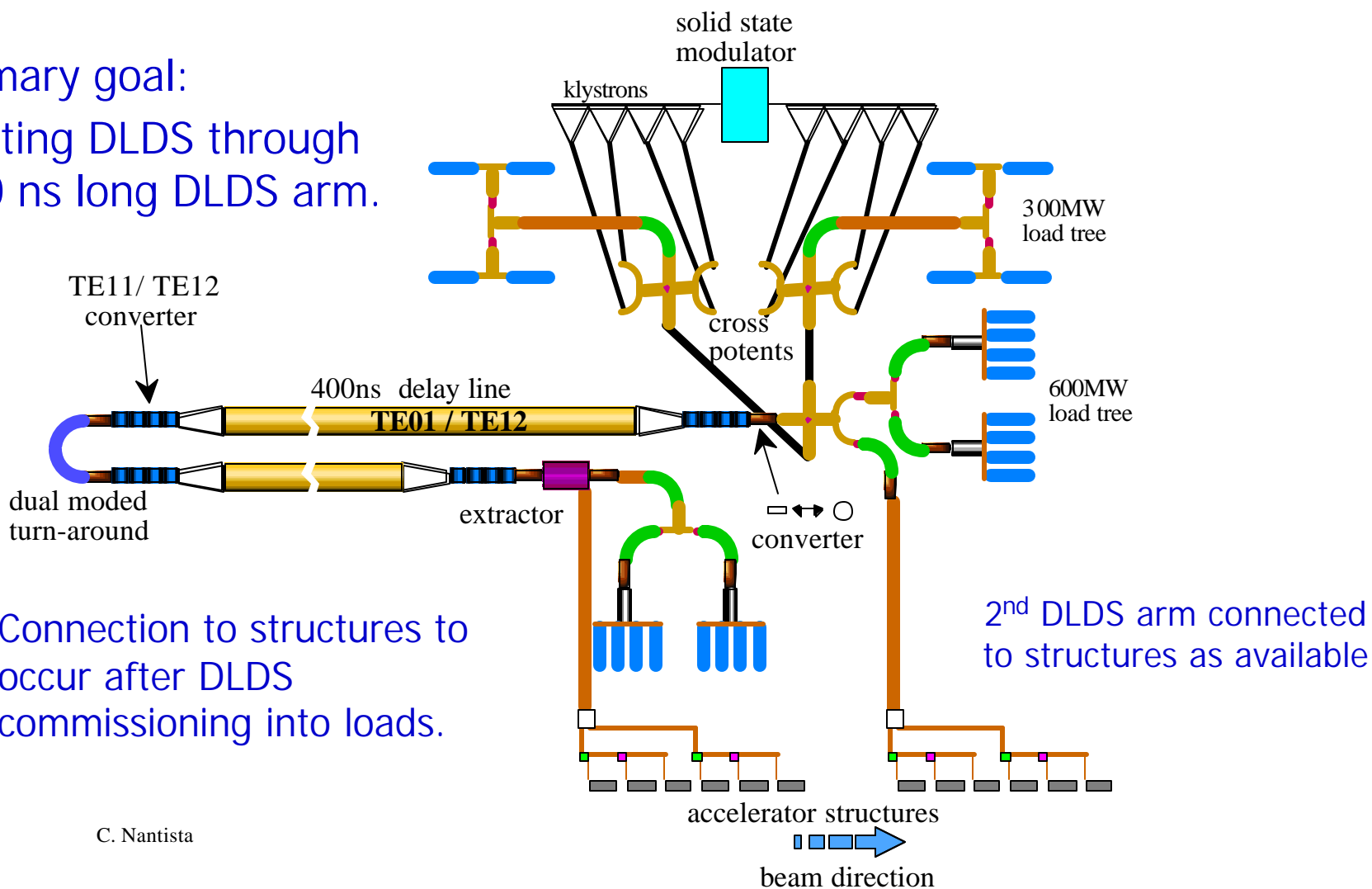
8-Pack Project





8-Pack DLDS Layout

Primary goal:
Testing DLDS through
400 ns long DLDS arm.



C. Nantista



8-Pack Status

DLDS system:

Beginning the conceptual layout for the Phase 2 DLDS system has been delayed by the new cold test program.

Layout of the system will begin in June.

LLNL may become involved with the design and fabrication of the system.

An integrated schedule with DLDS installation and commissioning, the delivery and installation of girders from FNAL, and the High Gradient Testing program at NLCTA is under development.



Project schedule overview Phase 1

Infrastructure complete 7/16
Modulator commissioned 8/20
Klystron power to loads 9/16
SLEDII installation begins 10/1
pump down SLEDII 12/10/02
High power testing begins 1/6/03
600 MW milestone 3/11/03

PEP2 maintenance,
July to October
affects manpower
and facilities

See details at:

<http://www-project.slac.stanford.edu/lc/local/Projects/8Pack/8pack.html>



Project schedule overview Phase 2

Begin DLDS system design 6/02

Phase 2 system design review 7/02

Fabrication and high power testing Jan. '03 – Nov. '03

1st FNAL girder arrives at NLCTA 7/3/03

2nd FNAL girder arrives at NLCTA 6/15/04

DLDS system installation period Oct. '03 - Feb. '04

DLDS Testing July 2004

500 MW DLDS milestone August 2004



8-pack Issues and Concerns

RF components: The cold testing of components now underway is consuming resources, but will pay off later

Modulator: The improved 4-pack modulator should be able to provide the needed 530A, 500kV, 3.2 μ secs for phase 1, this still needs to be demonstrated.

Klystrons: Klystron availability is very uncertain, and has the potential of considerable delay,

what are the minimum initial requirements to commission the rest of the system?

what are the alternatives?



Next Linear Collider

8-Pack Project



- End -